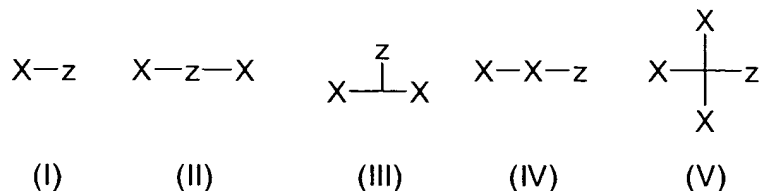


WHAT IS CLAIMED IS:

1. An emulsion comprising a dispersed phase droplet having a surfactant layer at the interface with the continuous phase wherein said surfactant layer is formed by the reaction of the wall-forming moieties of a microcapsule wall-forming material with an interface modifying compound selected from compounds having a formula (I), (II), (III) (IV) or (V)



wherein Z is a moiety that contributes to modifying the surface properties of said emulsion and each X is, independently, a functional moiety capable of reacting with the wall-forming moieties of a wall-forming material and the moieties designated by lines linking the X and Z functional groups have a molecular weight of between 50 and 4000, and may be optionally substituted aryl, hydrocarbyl, or heterocyclic units, or combinations thereof, optionally containing internally linked amino, ether, thioether, acetal, ester, thioester, amide, sulphonamide, urethane, urea, carbonate, siloxane, or phosphonamide groups or combinations thereof and wherein substantially all of the wall-forming moieties of the wall-forming material are reacted with one or more groups -X of the interface modifying compound such that little or no wall-forming functionality remains after reaction.

2. An emulsion according to claim 1 wherein -X in structures (I) to (III) and (V) is hydroxyl, thiol, a group -NHA wherein A is hydrogen or C<sub>1</sub> to C<sub>4</sub> alkyl or a group -CO-OR where R is hydrogen or a hydrocarbyl moiety having 1-30 carbon atoms optionally linked or substituted by one or more halo, amino, ether or thioether groups or combinations of these or wherein in structure (IV) -X- is -NH-.

3. An emulsion according to claim 1 or 2 wherein -Z comprises sulphonate, carboxylate, phosphonate, phosphate, quaternary ammonium, betaine, oxyethylene or an oxyethylene-containing polymer.

4. An emulsion according to claim 3 wherein when -Z is sulphonate, carboxylate, phosphonate or phosphate it is present as a salt providing the -Z<sup>-</sup> anion or

wherein when -Z is quaternary ammonium it has the structure



wherein  $R_1$ ,  $R_2$  and  $R_3$  are independently hydrogen or  $C_1$  to  $C_4$  alkyl and  $A^{n-}$  is a suitable inorganic or organic anion such as halide or acetate provided that not more than one of  $R_1$ ,  $R_2$  and  $R_3$  is hydrogen

or wherein

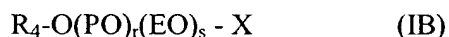
when  $-Z$  is oxyethylene or an oxyethylene-containing polymer, it is an oxyethylene polymer or a random or block oxyethylene/oxypropylene copolymer containing an oxyethylene to oxypropylene ratio of greater than 1.

5. An emulsion according to any of the preceding claims wherein the interface modifying compound of structure (I) has the formula



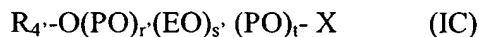
wherein  $Y_1$  represents the moiety linking  $X$  and  $Z$  and is a straight or branched chain alkyl linking group containing from 1 to 20 carbon atoms; or is phenyl, naphthyl, cyclopentyl or cyclohexyl; or

or wherein when  $Z$  is an oxyethylene containing polymer and  $Y_1$  represents a direct link between  $X$  and  $Z$  the interface modifying compound of structure (I) has the formula structure (IB)



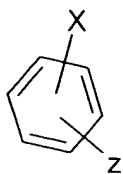
wherein  $R_4$  is an end-capping group which is  $C_1$  to  $C_4$  alkyl,  $r$ , and  $s$  are independently from 0 to 3000, provided that  $s$  is not 0 and the total of  $r + s$  is from about 7 to about 3000 and  $EO$  and  $PO$  represent oxyethylene and oxypropylene respectively which may be arranged in random or block formation; or

or wherein when  $Z$  is an oxyethylene/oxypropylene block copolymer and  $Y_1$  represents a direct link between  $X$  and  $Z$  the interface modifying compound of structure (I) has the formula (IC)



wherein  $R_4'$  is an end-capping group which is  $C_1$  to  $C_4$  alkyl,  $r'$ ,  $s'$  and  $t$  are independently from 0 to 2000, provided that  $s$  is not 0 and the total of  $r' + s' + t$  is from about 7 to about 3000 and  $EO$  and  $PO$  represent oxyethylene and oxypropylene respectively; or

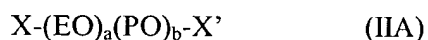
wherein when  $Y_1$  is a ring structure group, the interface modifying compound of structure (I) has the formula (ID)



(ID)

wherein X and Z are as defined previously or if X and Z are adjacent substituents capable of reacting together they may form a cyclic anhydride capable of ring-opening under the reaction conditions.

6. An emulsion according to any of claims 1 to 4 wherein the interface modifying compound of structure (II) wherein -Z- is an oxyethylene containing polymer and there is a direct bond between -Z- and each -X has the formula (IIIA)



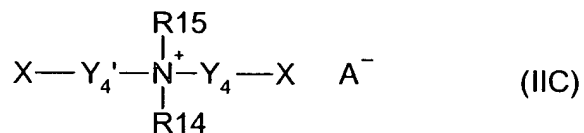
wherein a and b are independently from 0 to 3000, provided that a is not 0 and the total of a + b is from about 7 to about 3000 and EO and PO represent oxyethylene and oxypropylene respectively which may be arranged in random or block formation; or

wherein the interface modifying compound of structure (II) wherein -Z- is an ethylene oxide, propylene oxide block copolymer and there is a direct bond between -Z- and each -X has the formula (IIB)



wherein a', b' and c are independently from 0 to 2000, provided that b is not 0 and the total of a' + b' + c is from about 7 to about 3000 and EO and PO represent oxyethylene and oxypropylene respectively; or

wherein -Z- in structure (II) is quaternary ammonium and structure (II) has the formula (IIC)



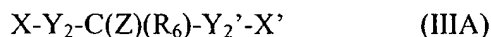
wherein R<sub>14</sub> and R<sub>15</sub>, which may be the same or different, are hydrogen C<sub>1</sub> to C<sub>20</sub> straight or branched chain alkyl; aryl; or C<sub>1</sub> to C<sub>4</sub> aralkyl, wherein each aryl group may be optionally substituted by C<sub>1</sub> to C<sub>4</sub> alkyl, nitro or halo and Y<sub>4</sub> and Y<sub>4</sub>' which may be the same or different are

-R<sub>8</sub>- or

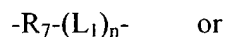
-R<sub>7</sub>-(L<sub>1</sub>)<sub>n</sub>-

wherein  $R_7$ , and  $R_8$  are independently  $C_1$  to  $C_{10}$  straight or branched chain alkyl linking groups optionally substituted by halogen or  $C_1$  to  $C_4$  alkoxy and  $(L_1)_n$  is a polyoxyalkylene group;  $n$  is from 2 to 20 and  $A^-$  is a suitable anion.

7. An emulsion according to any of claims 1 to 4 wherein the interface modifying compound of structure (III) has the formula (IIIA)



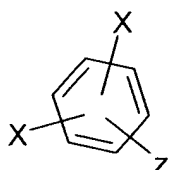
wherein  $R_6$  is hydrogen or more preferably a  $C_1$  to  $C_4$  alkyl group optionally substituted by ether, for example  $C_1$  to  $C_4$  alkoxy or halogen and  $Y_2$  and  $Y_2'$ , which may be same or different are independently



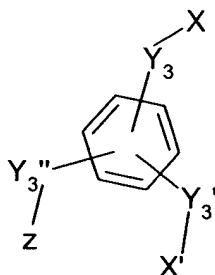
or



wherein  $R_7$ , and  $R_8$  are independently  $C_1$  to  $C_{10}$  straight or branched chain alkyl linking groups optionally substituted by halogen or  $C_1$  to  $C_4$  alkoxy and  $(L_1)_n$  is polyoxyethylene, polyoxypropylene or polyoxybutylene;  $n$  is from 2 to 20, preferably from 4 to 10; or wherein the interface modifying compound of structure (III) wherein the moiety linking  $X$  and  $Z$  is a ring structure group has the formula (IIIB) or (IIIC)

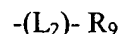


(IIIB)



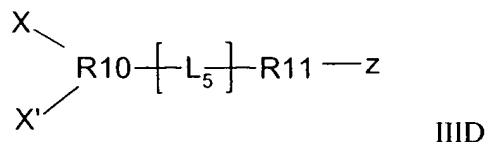
IIIC

wherein  $Y_3$ ,  $Y_3'$  and  $Y_3''$  individually represent a direct link between  $X$  or  $Z$  (as the case may be) and the ring structure or may be a group



where  $L_2$  is an ester linking group  $-C(O)-O-$ ,  $R_9$  is oxyethylene, oxypropylene or oxybutylene or polyoxyethylene, polyoxypropylene or polyoxybutylene having a degree of polymerisation from 2 to 20; or

wherein the interface modifying compound of structure (III) has the formula (IIID)



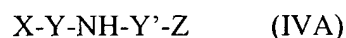
wherein  $\text{R}_{10}$  is a  $\text{C}_1$  to  $\text{C}_8$  straight or branched chain alkyl group and the two groups X and X', which may be the same or different, may be attached to the same carbon atom in the alkyl chain or to different carbon atoms in the alkyl chain,  $-\text{L}_5-$  a linking group which is

$-(\text{L}_1)_n-$  or

$-\text{R}_8-$

wherein  $\text{R}_8$ , and  $(\text{L}_1)_n$  are as defined above in relation to formula IIIA and  $\text{R}_{11}$  is  $\text{C}_1$  to  $\text{C}_4$  alkyl.

8. An emulsion according to any of claims 1 to 4 wherein the interface modifying compound of structure (IV) has the formula (IVA)



wherein Y and Y' include independently a straight or branched chain  $\text{C}_1$  to  $\text{C}_{10}$  alkyl group, a polyoxyethylene, polyoxypropylene or polyoxybutylene polymer chain of formula  $-(\text{L}_1)_n-$  as defined above or a group  $-(\text{L}_2)-\text{R}_9-$  as defined above.

9. An emulsion according to any of the claims 1 to 4 wherein the interface modifying compound is a sulfonate polyester polyol prepared by reacting sodium sulphisophthalic acid, adipic acid, cyclohexane dimethanol, methoxy-polyethylene glycol (mw 750) and trimethylol propane to give a product having a hydroxyl number in the range of from 150 to 170.

10. An emulsion according to any of the preceding claims wherein the wall forming material is an isocyanate wall forming material.

11. An emulsion according to claim 10 wherein the isocyanate wall forming material is tolylene diisocyanate and isomers thereof, phenylene diisocyanate and isomers thereof, biphenylene diisocyanates and isomers thereof, polymethylenepolyphenyleneisocyanates (PMPPi), aliphatic hexamethylene diisocyanate and isomers thereof (HMDI), isophoronediiisocyanate (IPDI), p-tolyl isocyanate, dodecyl isocyanate and hexadecyl isocyanate and mixtures of such isocyanates.

12. An emulsion according to any of claims 1 to 9 wherein the wall forming material is a urea formaldehyde prepolymer in which the methylol ( $-\text{CH}_2\text{OH}$ ) groups have optionally been partially etherified by reaction with a  $\text{C}_4$ - $\text{C}_{10}$  alkanol.

13. A process for forming an emulsion which comprises reacting an interface modifying compound having a formula (I), (II), (III), (IV) or (V) as defined in Claim 1 with a microcapsule wall-forming material wherein substantially all of the wall-forming moieties of the wall-forming material are reacted with one or more groups -X of the interface modifying compound such that little or no wall-forming functionality remains after reaction and subsequently or simultaneously producing an emulsion using the surfactant reaction product.
14. A process according to claim 13 wherein the reaction of the interface modifying compound and the wall-forming material takes place in an organic phase as a pre-reaction, the resultant surfactant being either isolated or used in solution in the organic phase, and thereafter emulsifying an oil phase containing the surfactant product into water.
15. A process according to claim 13 wherein the interface modifying compound and the wall-forming material are reacted in an organic phase after emulsification has taken place.
16. A process according to claim 13 where the wall-forming material is dissolved in an oil phase which is dispersed in water, optionally in the presence of additional surfactants and optionally in the presence of any material to be contained in the dispersed oil phase, whilst the interface modifying compound is added to the aqueous continuous phase and thereafter the interface modifying compound and the wall-forming material react at the interface of the continuous phase and the dispersed phase droplets to form the surfactant.
17. The reaction product of an interface modifying compound having the formula (I), (II), (III), (IV) or (V) as defined in claim 1 and an isocyanate wall forming material or a urea formaldehyde prepolymer in which the methylol ( $-\text{CH}_2\text{OH}$ ) groups have optionally been partially etherified by reaction with a  $\text{C}_4\text{-C}_{10}$  alkanol.